CLAIMS

1. Sample loading device for loading and injecting a sample of a specimen, comprising:
- an injection channel (I) having a sample injection spot (INJ), the injection channel (I) adopted for feeding a fluid comprising a specimen;
- an injector (Uinj, UIN) for injecting the specimen into the fluid along the injection channel (I);
- a separation device (S, SG, Sep+, Sep-) adopted for separating a sample from the specimen at the sample injection spot (INJ);
- a control unit (RD) adopted for controlling the separation device (S, SG, Sep+, Sep-) in response to a detected physical parameter of the fluid.

2. Sample loading device of claim 1 or any one of the above claims, wherein the control unit (RD) is adopted for detecting a time dependant parameter of the fluid.

3. Sample loading device of claim 1 or any one of the above claims, wherein the control unit (RD) is adopted for detecting an electrical parameter of the fluid.

4. Sample loading device of claim 1 or any one of the above claims, wherein the parameter is a resistance of the fluid along the injection channel (I).

5. Sample loading device of claim 1 or any one of the above claims, wherein the parameter is a current flow along the injection channel (I).

6. Sample loading device of claim 1 or any one of the above claims, wherein the injection channel (I) comprises a specimen reservoir (Res) arranged between a first part and a second part injection channel, the second part comprising the sample extraction point (SEP).

7. Sample loading device of claim 5 or any one of the above claims, wherein the specimen reservoir (Res) comprises an inlet receiving the

specimen comprising fluid, the inlet arranged near the connection to the second part of the injection channel (I).

8. Sample loading device of claim 5 or any one of the above claims, wherein the distance of the reservoir (Res) and the sample extraction point (SEP) is about 200 µm.

9. Sample loading device of claim 5 or any one of the above claims, wherein the injector (Uinj, UIN) is adopted for injecting the specimen from the specimen reservoir (Res) into the injection channel (I).

10. Sample loading device of claim 1 or any one of the above claims, wherein the injector (Uinj, UIN) is adopted for generating an electrical field along the injection channel (I).

11. Sample loading device of claim 8 or any one of the above claims, wherein the control unit (RD) is adopted for determining a time dependant current flow along the injection channel (I), if an electrical field is provided.

12. Sample loading device of claim 1 or any one of the above claims, wherein the injector (Uinj, UIN) comprises a first electrode (Uinj-) arranged near a first end of the injection channel (I) and a second electrode (Uinj+) arranged near a second end of the injection channel (I), wherein the sample injection spot (INJ) is arranged between the first and second electrode (Uinj-, Uinj+).

13. Sample loading device of claim 1 or any one of the above claims, wherein the separation device comprises a separation channel (S) connected to the sample injection spot (INJ).

14. Sample loading device of claim 11 or any one of the above claims, wherein the separation device comprises a first electrode (Sep+) arranged in the separation channel (S) and a second electrode (Sep-) arranged in the separation channel (S), wherein the sample injection spot (INJ) is arranged in between the first and second electrode (Sep+, Sep-).

15. Sample loading device of claim 11 or any one of the above claims, wherein the separation device comprises a control unit for measuring an electrical parameter of the fluid in the sample injection spot (INJ).

16. Sample loading device of claim 13 or any one of the above claims, wherein the electrical parameter is a potential difference along the separation channel (S).

17. Sample loading device of claim 1 or any one of the above claims, wherein the injection channel (I) is incorporated within a glass or plastic body.

18. Sample loading device of claim 1 or any one of the above claims, wherein the electrodes (Sep-, Sep+, Uinj-, Uinj+) comprise a conductive material.

19. Sample loading device of claim 1 or any one of the above claims, wherein the fluid in at least the separation channel (S) comprise PDMA or acrylamid or another polymer.

20. Method for extracting a sample of a specimen, comprising the steps of:
- providing the specimen;
- measuring a physical parameter of the specimen;
- extracting the sample of the specimen dependant of the measured physical parameter.

21. Method claim 19 or any one of the above claims, wherein the step of providing the specimen comprises the steps of:
- providing an injection channel (I), having a reservoir (Res) arranged between a first and second part of the injection channel (I);
- providing an injector (Uinj+, Uinj-) for injecting the specimen into the injection channel (I);
- supplying the specimen into the reservoir (Res).

22. Method of claim 20 or any one of the above claims, wherein the step of providing means comprises the step of:

- providing a first electrode (Uinj-) on a first end of the injection channel (I) and a second electrode (Uinj+) on a second end of the injection channel (I), the first and second electrode (Uinj-, Uinj+) adopted for supplying an electrical field along the injection channel (I).

23. Method claim 20 or any one of the above claims,
wherein the step of providing the specimen comprises the step of:
- feeding a sieving matrix into the injection channel (I).

24. Method of claim 20 or any one of the above claims,
wherein the step of measuring comprises the steps of:
- providing a control unit (RD) for measuring the physical parameter within the injection channel (I);

25. Method of claim 20 or any one of the above claims,
wherein the step of measuring comprises the steps of:
- injecting the specimen into the injection channel (I);
- measuring the physical parameter of the specimen within the injection channel (I);

26. Method claim 20 or any one of the above claims,
wherein the physical parameter comprises a time dependant resistance of the specimen.

27. Method of claim 20 or any one of the above claims,
wherein the physical parameter comprises a time dependent current flow through the specimen.

28. Method of claim 20 or any one of the above claims,
wherein the physical parameter comprises a time dependent potential difference through the specimen.

29. Method of claim 20 or any one of the above claims,
wherein extracting the sample comprises the steps of:
- providing a sample injection spot (INJ) within the injection channel (I);

- removing the sample out of the injection channel (I) at the sample injection spot (INJ).

30. Method of claim 20 or any one of the above claims,
wherein loading and injecting the sample comprise the step of:
- determining a peak value of the physical parameter measured;

31. Method of claim 20 or any one of the above claims,
wherein loading and injecting the sample comprise the step of:
- providing an separation channel (S) connected to the injection channel (I), the connection defining a sample injection spot (INJ);
- providing means for separating (Sep-, Sep+) a sample on the sample injection spot (INJ) out of the injection channel (I) into the separation channel (S).

32. Method of claim 30 or any one of the above claims,
wherein the step of providing means comprise the step of:
- providing a first separation electrode (Sep-) on a first end of the separation channel (S) and a second separation electrode (Sep+) on a second end of the separation channel (S), the first and second electrode adopted for supplying an electrical field along the separation channel (S) and the sample injection spot (INJ).

33. Method of claim 29 or any one of the above claims,
supplying a separation voltage along the separation channel (S).